the course of their passage a whole series of gas molecules are simultaneously ignited, and if the flame is to be continuous, there must be for each gas molecule burnt ^ new one ready for combustion, and the necessary conditions obtaining therefor.

The flame in the combustion chamber extends no further than the veil of the streams of gas blown in. For the possibility of its existence, therefore, free oxygen must be continually received into the combustion chamber in quite free expansion, and this must be able to reach all sides on which the gas stream should burn, it being thereby continuously consumed, and must therefore also be continuously freshly supplied.

From union with gas, products of combustion result which force their way between gas and air, and obstruct their further meeting. On this ground, it is impossible to completely use up both media. If one wishes to completely burn the gas in the combustion chamber, so one must introduce air in absolute excess. The smaller one selects this excess of air the slower the combustion takes place, and the greater the surface which is swept by the flame, and the longer this will be.

From the aforesaid, it follows that the direction and the form, and the guidance of the flame, are essentially dependent on the direction and form of the gas stream, from which the flame is again renewed, as well as from the active force, which is contained in the gas stream, and enables it not to be caused to swerve, owing to small opposing resistances.

One gives the gas current its direction by means of suitable port-blocks or burners built in furnace heads for the purpose of allowing them to enter suitably. These blocks contain ports, which lie in the direction of the major axis of the hearth, parallel to the side walls and a slightly dipping bottom resting on the upper surface of the hearth, whilst their covering possesses a great angle of depression. By these means the ports are narrowed in a downward direction, whereby the gases in their outlet openings receive increased velocity, and are hindered in their endeavour to rise. In consequence, one selects the port openings small in comparison to the upper sections of the upper gas passages, so that the outlet/velocities in consequence of the gas pressure and the buoyancy must boeoine quite